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Opportunities for the Employment of Disabled Men

These preliminary reports on opportunities for the employment of disabled men in various industries are not presented as exhaustive surveys of the trades. The material was prepared primarily for the use of the employment bureau of the Red Cross Institute and it has been thought well to publish it at this time for the information of other organizations concerned in the placement or training of the physically handicapped

The purpose of making an industrial survey in connection with the re-education and rehabilitation of the cripple is really five-fold.

In the first place a survey of a particular industry enables the assembly of information as to the desirability of establishing classes for the training of cripples in that industry.

In the second place, it is only by a careful survey of any industry that adequate knowledge of possibilities of employing cripples in that industry can be obtained. It is obvious that such knowledge is essential to prompt and efficient placement of the crippled men.

The third purpose of the industrial survey is to obtain a mailing list, consisting of the names of firms which are both able and willing to employ cripples. Such a list will be of permanent value for the employment bureau, as these firms can be circularized at any time for any particular needs.

The fourth aim of an industrial survey is to educate the employer to the point where he is willing to give the cripple a fair chance and to regard the placement of the handicapped, not as an appeal to charity or patriotism, but as a sound economic proposition.

The fifth and last object of the industrial survey is to find definite jobs for the men who apply for work at the employment bureau day by day. This is one of the most interesting phases of the work and will eventually be the most valuable. The industrial survey should prove the chief source of jobs as the bureau grows.

The method pursued in making the industrial survey has been to visit first the national and then the local trade associations. These associations have been asked to cooperate by sending the literature of the Red Cross Institute to all their members. Furthermore, the associations have been asked to permit speakers to appear before their meetings in order to explain the rehabilitation work and ask cooperation of the individual employer.

The next step has been to approach the trade journals and ask them to find space in their columns for articles on the training and employment of cripples. The response to this has been very generous and we have obtained widespread publicity within the industries.

Twenty-three industries have been taken up one at a time. Investigators have been sent to all of the largest factories in each industry and full reports of the findings have been filed in the office of the employment bureau. The cooperation of the smaller factories has then been solicited either by letter or visit. Separate factories in other lines of industry have also been investigated for special reasons, and if these industries have appeared fertile fields for study, the whole industry is covered later.

This work has been done partly by paid workers and partly by volunteers who have been carefully trained and directed. There are now on our files 862 names representing firms in or near New York City which are willing to cooperate and which employ anywhere from 25 to 10,000 men.

The information acquired has been varied and valuable. The survey department now has on file full descriptions of many processes open to cripples. Thus far 1,203 kinds of jobs have been found which are possible for leg cripples and 278 kinds of jobs for arm cripples.

Furthermore, a careful statement is made as to sanitary conditions, fire precautions, etc., in each factory, so that the employment bureau may have a full knowledge of all conditions which will react favorably or unfavorably on a cripple who might be placed in such factory. In total 542 factories have been investigated or visited since January 1, 1918.

It is difficult to state the results of the survey work, which is only just beginning. It is possible, however, to estimate some of the probable results.

In the first place, much definite information as to factory conditions has been acquired by our office. In the second place, much information as to the desirability and possibility of employing cripples has been given to the employers.

One of the most interesting results of the work of the survey has been the change in the attitude of the employer. This is due, of course, in large part to the educational campaign to create an enlightened and constructive public opinion regarding the cripple; but it has been contributed to by the intensive work which the survey department has done through the trade associations.

Six months ago it was necessary to talk only of the war cripple; the employer who would listen to the problem of the industrial cripple was very rare. Today it is the exception to find an employer who declines to receive the industrial cripple—not only as a preliminary step to the employment of the war cripple, but also as an economic factor in the labor problem of today.

Perhaps the most definite result of the survey is the specific knowledge of jobs appropriate for cripples of varied types. The other obvious result of the industrial survey has been the actual jobs found for the industrial cripples who are being placed by the employment bureau every day. It is impossible at this time to estimate accurately how many of these men have been placed in jobs discovered by the survey. As time passes, however, this will prove the most definite practical result of the work of the survey department.

Preliminary statements on some of the industries already surveyed are given herewith.

THE PIANO INDUSTRY

The first piano factories visited were small ones. In every case, the employer was interested and eager to cooperate, but there were not many openings. In small factories each man must do several different kinds of work, and it almost always happens that at least one of the processes which he must do is heavy or, in some way, impossible for cripples.

In the larger factories visited there was a very different situation. Each man worked on one process; in fact, there were often several men working all the time at one process. This means that it would be possible to employ two or three cripples at the same process by using an able-bodied man, who could be an unskilled worker, to carry the material back and forth to these men. This matter of the material is a problem in the placement of cripples in the piano industry. A man might be able to work at the air-brush with one arm, but he could not lift the big piece of wood on to the rack or remove it when varnished.

The Manufacturers' Association says that the piano manufacturers in England have been able to employ a large number of cripples. It is true, also, that cripples have been placed in the piano industry in New York, and the reports from them show that they found the work suitable. The men placed were not skilled men, nor were they of the best type of workmen. Their wages were, therefore, low. All the employers agree, however, that it would be possible to employ men in the more highly paid work, if they could get the right kind of men.

PROCESSES

The following are the processes which we have found possible for crippled men. In no case is the process listed unless the employer agreed that the work could be done. Not all of the machinery at present is possible for cripples, but there is much of it which could be adjusted, and all employers are eager and willing to make those adjustments. For example, air-brush work is very possible for cripples with the exception of the act of filling the can. By arranging some sort of an automatic stop-cock which can be worked with the foot, an employer can make this act easy and simple. Similar changes may be made in various other machines. Investigators have visited various factories—those which make upright pianos, grand pianos, piano players, and phonographs. Many kinds of work are common to all of these factories; for example, cabinet-work, carpentry work, glueing, polishing and varnishing, screwing, making hammers, and assembling. .

1. Air-brush varnishing. Men stand for this work, but it can be done with one arm. In one factory one of the men hurt his arm and the superintendent arranged a mechanical device so that the man could fill his can with one hand. The worker holds a can of varnish with an automatic spray in it, stands in front of a big case, and passes this little spraying machine over the surface. The odor of the varnish is strong and the work is dirty, but it is not heavy and it could be done by a one-armed or one-legged man. Wages, $15 to $20 a week.

2. Painting and filling. Men stand in front of a table on which are placed the pieces of piano case. This material could be handed to them by a boy and taken away again. The work is not hard. It is certainly possible for a one-legged man. A superintendent in one factory said that he believed it to be possible also for a one-armed man. Wages, $14 a week.

3. Rubbing. These men hold a pad in one hand and rub with the other, but the pad could be fastened to some part of the body. The work is, therefore, possible for a one-armed man. It might be possible for a one-legged man, but would be difficult since he must stoop at times. Wages, $24 a week.

4. Doctoring. This requires two hands, but it could be done by a leg cripple. It is skilled work, consisting of adjusting the parts of the piano.

5. Side gluing. This requires two hands, but could be done by a leg cripple. Wages, $15 a week.

6. Cabinet-making. This work includes all kinds of cabinet-work, both machine work and hand work. A one-legged man could do it, if he were able to stand, but he must have two arms. It is contract work. Wages, $20 to $22 a week.

7. Finishing. This requires three years' training. It is customary for men to be promoted to this work rather than for new skilled workmen to be taken on. It is really fine polishing work and would require two arms, but it could be done by a one-legged man, as he might be seated most of the time. Wages, $25 up; learners begin at $10.

8. Tuning. This requires skilled men who must have two hands. It is such a good trade for the blind that we do not emphasize it for cripples, but it could be done by a one-legged man. Wages, $20 up.

9. Regulating. In one factory they said they would take a learner, if he were promising, at $14 a week. The work could be done by a one-legged man. It consists in regulating the action of the piano. Usual wages, $30 a week.

10. Fine polishing. This could be done by a one-armed man. Wages, $20 a week and up.

11. Installation. In this department, the action is put into the piano. This requires two arms, but it could be done by a one-legged man. Wages, $20 a week and up.

12. Making the hammers. Practically all of this work would require two arms, but could be done by a one-legged man. The hammers are made of felt, which comes into the department in sheets. It is cut up, put on a rack, and then shaped by a sharp knife. This is skilled work and requires two hands. The pieces so shaped are then put in presses. This might be done by a one-armed man, but as the same man would have to do other work, it would not be an available position. Learners would be taken at $12 a week. Usual wages, $24 a week.

13. Cutting hammers. Hammers are made in one long piece and cut up like a row of chops in a butcher shop. This is done by a machine which could be managed by a one-armed man. The work is done seated and is suitable, therefore, for a one-legged man.

14. Boring hammers. This is done by a little drill machine, which works horizontally. It could be guarded. The hammer is placed on a flat table and held in place with one hand while the machine bores a hold in it. This could be done by either a one-armed or a one-legged man. Wages, $15 a week.

15. Wiring Hammers. This work, which is done seated, consists of putting little pieces of wire made like double-headed tacks through the hammers. Wages, $12 a week.

16. Making cases. There is some cabinet-work here, which could be done by arm cripples or leg cripples. Wages, $16 a week.

17. Sanding machines. There are several kinds of sanding machines, consisting usually of a flat surface of metal over which the material to be sanded is passed. The work is done standing but it is not heavy, and, in some of the departments where the pieces are not too large, it could be done by a one-armed man. Wages, $15 to $18.

18. Gluing. There are various kinds of gluing to be done in the factory, and practically all of it could be done by a one-armed man.

19. Stringing. This requires two hands, but it could be done by a one-legged man, as the worker might be seated part of the time. It is skilled work. The man has a board in front of him, and the wires are on reels over his head. He must know which wires to choose and just where to fasten them to the board.

The following positions were also open to cripples in some factories:

Porters. The work consists of regular porter's work. Wages, $14 a week.

Sweepers. Wages, $14 a week.

Elevator Men. Wages, $14 a week.

Shipping Clerks. Employers need skilled men for this and would be glad to take one-armed men. Wages begin at $21 a week and rise very quickly.

POSSIBILITIES FOR ONE-LEGGED MEN

Process	*Weekly Wage*	
	Minimum	*Maximum*
Air-brush varnishing	$15	$20
Painting and filling		14
Doctoring		
Gluing		15
Cabinet-work	20	22
Finishing	25	
Tuners	20	
Regulating		30
Installation		
Making hammers		24
Boring hammers		15
Cutting hammers		
Wiring hammers		12
Sanding machines	15	18
Stringing		
Shipping clerk	21	

POSSIBILITIES FOR ONE-ARMED MEN

Process	*Weekly Wage*	
	Minimum	*Maximum*
Air-brush varnishing	$15	$20
Painting and filling		14
Rubbing		24
Cabinet-making (some kinds)	20	22
Fine polishing		20
Cutting hammers		
Boring hammers		15
Sanding machines	15	18
Gluing		
Porter's work		14
Sweeper's work		14
Elevator man		14
Shipping clerk	21	

WORKING CONDITIONS

Union. The trade is not for the most part unionized.

Wages. The wages in this industry are not so high as in the shoe trade, for instance, but, on the other hand, there is not so much of the very cheap work. Most of the processes which were possible for cripples would average from $18 to $25 a week. Learners, of course, would have to begin with much less but probably a good workman could be so placed in this industry that, at the end of a few months, he would be earning from $18 to $20 a week, with a possibility of raising that to $25. The outlook from the point of view of wages is good.

Fire precaution. The small factories do not make their own cases. They have them made out of New York. This restricts very much the field for cripples because the carpentry and cabinet-work offer openings in the larger factories. This means also that the fire safeguards, fire drills, etc., are not so good in the small factories. The very presence of the inflammable raw material in the large factories causes unusual precautions.

Safety devices. The owners and managers of the large factories without exception are interested in all problems of safety devices. Many of the factories have suggestion boxes, with prizes offered to men who make the best suggestions for safety. They also have safety committees and are very ready to adopt any suggestions from outsiders for the safety of their workers. This, of course, is a great asset for the employment of cripples.

Nationalities. In some of the factories there were special nationalities in some one department, as, for instance, Italians. This would have to be considered in placing the men, but there is such a variety of workers in the different factories and different departments that it need not prove an obstacle.

ADVANTAGES FOR CRIPPLES

1. Trade not seasonal.
2. Not dangerous.
3. Good working conditions, ventilation, etc.
4. Machinery not complicated.
5. Learners can be taken in the factories.
6. About one-third of the work could be done by either arm or leg cripples with slight adjustment.

DISADVANTAGES FOR CRIPPLES

1. Some of the work is heavy.
2. Small factories are impossible because each man must do such varied work.

THE LEATHER INDUSTRY

The leather industry is a good industry for cripples. All the employers visited were willing to take cripples and thought that a man should be able to learn the trade quickly in the factory. They were willing to make adjustments in order to employ cripples efficiently. Much of the work is possible for cripples, since about fifty per cent. of the processes are done seated, but there are few processes that can be done by one-armed men.

The industry is divided into several different lines—trunks, suitcases, and bags; pocketbooks, handbags, and small leather novelties; belts and straps; and men's belts only. It is impossible to give the minimum and maximum wages for each operation as it varies as the men become more proficient, but the lowest pay for any job is $9 per week and the highest the investigator found was $30.

PROCESSES

Trunks

1. Lining trays. The tray comes to the man who does the lining in a rough state. His work is to cut out the lining material and to paste it to the wood. The tray then is taken to another bench where it receives the finishing touches. At this bench men finish up the corners where the lining comes together with a piece of tape and also cover the edges of the tray with tape. On the outside of the trunk canvas is used in a great many cases and also on the outside of the trays. This is also pasted on in the same way as the lining. Some of the trays have strips of wood for reinforcement, which are painted in another department.

2. Cutting. Cutting linings and fiber for making trays is another operation. This is done either with a knife or scissors.

3. Riveting. In this operation hinges are riveted on steel bands. The hinge is fitted to the steel band and a hole is punched with a machine operated with a foot pedal. After the rivets are inserted in the holes, they are driven up with a rivet hammer.

4. Nailing. On all trunks, there are strips of wood nailed to the body of the trunk to protect it from damage in shipment.

5. Pasting. In the suitcase department, the leather is pasted to the inside lining and the frames of the case. The cloth is pasted on the inside of the suitcases before the leather is put on the outside.

6. Mounting locks. This is done by boring holes in the side of the case and attaching the lock to the case with rivets.

All the above occupations could be done by a man with one leg.

Pocketbooks and Novelties

1. Coloring. The leather comes to the factory all of one color—a light brown—and is colored in the factory with the different colors in which the goods are to be made up.

2. Making frames. There is one department where are made the frames to which the fasteners and the leather are attached, and another where these frames are assembled and the fasteners put on which hold the backs together.

3. Pasting and stitching. The lining is pasted to the leather of the outside cover before the cover is stitched on to the iron frames.

The only operation a one-armed man could do in a pocketbook factory would be coloring of the leather. The balance of the work could be done by a leg cripple, as the work is light and not hard to do.

Belts and Straps

1. Cutting and pasting. The leather comes to the factory in large hides and is cut up into the different style belts to be manufactured. Belts which have fancy work on them are put in a stamping machine and stamped. Quite a number of belts are made of two pieces of leather and, in these cases, the under part is pasted to the top.

2. Attaching buckles. In one occupation the buckle is fastened to the strap, and in another the loop for the end of the belt is sewed on.

3. Punching. Holes are punched in the belts by a machine worked with a foot pedal. After these holes are punched, the belt is taken to another department and the holes are dyed the color of the belt.

4. Turning. The final process is to run the leather strap through a machine which turns over the two edges of the belt, in order that the lining or the rough edge may be sewed.

POSSIBILITIES FOR ONE-LEGGED MEN

Trunks and Bags

Lining trays
Finishing trays
Putting canvas on wood
Painting trays
Cutting lining and fiber
Riveting hinges on steel bands
Punching holes in fiber
Nailing pieces on brass
Stitching straps
Fastening on leather covers
Fastening cloth on inside of cases
Mounting locks

POCKETBOOKS AND NOVELTIES

Coloring leather
Making frames
Pasting on lining to leather
Setting together of frames
Stitching
Belts and straps
Cutting
Stamping
Pasting
Fastening on buckles
Punching holes
Putting on loops
Dyeing holes
Operating a turning-in machine

POSSIBILITIES FOR ONE-ARMED MEN

Coloring of leather
Punching holes
Stamping
Dyeing holes

WORKING CONDITIONS

Union. The trade is strongly non-union.

Wages. Wages vary, the beginners getting from $9 to $12 per week. Skilled workers make as high as $30 per week at piece work. The trade is seasonal.

Hours. The hours are long. Most of the factories work from eight in the morning to six at night, with one-half hour at noon.

Physical conditions. The factories occupy from one to four floors of large buildings. Conditions of light, air, and noise are good in most places. Only two poorly ventilated factories were found. Factories are clean as a rule.

Risks. Fire risk is not great. Little machinery is used and that is not dangerous.

Nationalities. The investigator found all races, with Jewish predominating. None was barred. Forty to fifty per cent. of the work is done by women.

THE RUBBER INDUSTRY

The rubber industry affords many opportunities for disabled men. All the employers visited stated that they would be glad to cooperate in placing men and that they would use and teach handicapped men in their factories. There are not so many openings for one-armed as for one-legged men. Men wearing artificial limbs find the heat in some of the departments very annoying, and men with lung weakness are sometimes troubled by the starch that is used on the rubber.

There are several divisions of the rubber industry: the manufacture of mechanical rubber, the manufacture of large articles such as automobile tires, rubber boots, etc., the manufacture of rain coats, and the manufacture of smaller rubber articles such as bathing caps, hot water bottles, rubber tubing, balloons, etc. Nearly all the factories for large articles are in the West, few in New York, but there are in New York a great many factories for smaller articles.

PROCESSES

Raincoats

1. Operating power sewing-machine. This is a seated job possible for one-legged men. It demands very skilled workers. Wages, $25 to $60. Piece work.

2. Operating riveting machine. This is also a seated job possible for one-legged men. It consists in riveting the metal fasteners onto raincoats. A fastener is placed on the cloth in the proper place and then placed under a trip hammer or riveting machine. The work is not skilled. Wages, $9 to $20.

3. Operating power cutter. This is a standing job but possible for one-legged men. It is skilled work. The operator places the pattern of the raincoat on a pile of material, and a power cutting machine, with very sharp blades, cuts through the many thicknesses, cutting out some fifty to one hundred coats at once. Wages, $20 to $60. Piece work.

4. Seam cementing. After the seams in raincoats have been sewed together, the edges are turned down and made flat with cement. It is not skilled work. A standing job possible for one-legged men. Wages, $9 to $20 a week.

5. Operating spreading machine. The cloth is rubberized by this machine, which is a roller press. The material is put into the machine on a huge roll or spool, and runs over rollers covered with rubber preparation. As the cloth moves over these rollers, the rubber is spread onto it. After it is covered with the rubber, it passes over heated pipes to the other end of the machine where it is made into huge bolts. A standing job possible for one-legged men.

6. Operating milling machine. This machine grinds the rubber pieces, which are the raw material, into small bits, which are then carried on a band to the other end of the machine, where they go through a pair of rollers and are mashed into sheets. A standing job possible for one-legged men.

7. Mixing rubber. The rubber sheets are put through a process of melting and mixed with certain secret ingredients to make them the proper consistency to spread on the rollers that spread the rubber on the cloth. A standing job possible for one-legged men. Skilled work. Wages, $20 up.

Mechanical Rubber

1. Molding valve seats. The valve seats are molded out of hard rubber to fit all sizes of valves. A standing job possible for one-legged men. Skilled work. Wages, $12 to $35.

2. Making belting, matting, and hose. This is hard work for an able-bodied man as the articles weigh at least 300 pounds. Most of the work in mechanical rubber manufacturing is too heavy for cripples.

Miscellaneous Rubber Articles

1. Cutting biscuits. The first operation in the factory is to cut the biscuits, or huge chunks of raw rubber, into small pieces. These pieces are then heated and run through a presser which rolls them into corrugated sheets. Wages, $12 up.

2. Washing. The material then goes through the washing machine where it is ground to a certain extent.

3. Operating milling machine. It is taken next to the milling machine where it is mixed with other ingredients and the pigments for different colors are put in. This machine mixes the rubber like dough. After it has been thoroughly mixed and kneaded it is put through the roller.

4. Operating roller. Here the rubber is rolled into long sheets about three feet six inches wide and run onto a sort of reel. As the rubber goes through the machine, there is a broad piece of goods which goes through at the same time and winds on the reel. This is to dry the rubber and to prevent it from sticking by having the cloth between the two layers.

These first operations are preparing for the manufacture of articles and could all be done by men who had lost a leg, provided the amputation was below the knee.

5. Molding. Steel molds in the shape of the different articles are covered with a soap suds preparation by means of a brush. Then a sheet of the rubber is placed on the molds and put into a hydraulic press. The press forces the rubber into different molds. All of this work could be done by a one-legged man.

6. Making tubing. In another department are made the rubber tubes. The rubber is in sheets, which are fed into the machine and forced

out by a hydraulic press through a nozzle which forms the tubing. All the man has to do is feed to the machine the rubber sheets, and as the tube comes out of the machine, to coil it in a large pan that revolves on an axle. This pan is filled with starch to keep the tubes from sticking together. This can all be done by a man with one hand. Wages, $9 to $20 a week.

7. Watching. In this department the rubber, after being manufactured into the different grades of material that are to be used in the different operations, is run through rolls and made into long sheets. The man watches the rubber as it goes through these rolls. He must have had some previous experience in this line of work to be able to do it, but there are one or two other men who help in this work who are unskilled. All of this work could be done by a man who had lost a leg.

8. Making rubber bands. In making rubber bands, the first process is to take the strips of rubber and mold them into tubes of the circumferences that the rubber bands are to be when completed. These tubes are fed into a machine with a number of knives, which cut the rubber off in strips crosswise of the tubes, thus making the rubber bands. The machine can be adjusted to make bands of different sizes. The work could be done by a man with one hand. While the man who showed us the work stood, it seemed possible for a one-legged man to do the work if he could be provided with a stool.

9. Drilling vems. The material technically called vems in the rubber business is similar to the fittings used in pipe and cast iron fittings; for example, there are T's and Y's and offset crosses. These are cast in solid form and are then taken to this department and bored out, making the different fittings.

10. Threading. In this process the tubes that are used on the different syringes are tapped out and threaded so that they will screw into the fitting on the ends of a tube in a hot-water bottle or fountain syringe. This work could be done by a man with one hand provided he used a work arm on his right arm. He must have a good left hand to do this work. Wages, $9 to $20.

11. Making rubber balls. In this department, the rubber is put into molds and compressed into the form of a ball. After being taken out of the press, the balls go to another department, where they are vulcanized, and from the vulcanizing department, they are taken to a department where they have a hole drilled into them. It would take a man with two hands to do the work of molding the balls. The drilling could be done by a man with a work arm and one good arm.

12. Stripping. After being run through the press and onto a reel, as described before, the rubber is stripped from the cloth on which it was laid as it came through the machine. Three men are required to do this work. Two men standing at either side of the table throw pumice stone on the rubber as it comes off the cloth and brush it with a counter brush. A third man at the end of the table reels the rubber onto a spindle. The spindle with the rubber on it is then taken to another floor, where are made bathing caps, hot-water bottles, and other rubber appliances of this nature. All of the work in this department is now being done by women, except in one or two cases. A man cuts out the different goods to be manufactured.

13. Vulcanizing. After the hot water bottle or other article has been made, sulphur is poured into it, shaken around, and poured out, and sulphur powder is rubbed on to the outside. The article is then taken to a big tank heated by steam for vulcanizing. It is left in this tank for several hours and then taken to another department, where it is washed and made ready for sale.

POSSIBILITIES FOR ONE-LEGGED MEN

Power sewing machine operator (skilled)
Riveting machine
Power cutter operator
Seam cementer
Spreading machine operator
Milling machine
Mixing rubber (skilled)
Cutting biscuits
Washing
Milling machine
Roller
Pleating caps
Tubing
Helping on calendars
Watching
Rubber bands
Drilling vems
Threading
Rubber balls
Stripping
Vulcanizing
Press molding
Mixing machine
Cutter
Molding

POSSIBILITIES FOR ONE-ARMED MEN

Tubing
Rubber bands
Stripping
Drilling vems
Rubber balls

WORKING CONDITIONS

Union. Workers in the trade are not unionized with the exception of the sewers on rubber coats.

Wages. In most of the factories beginners receive $9 to $12 a week. The average wage for skilled work is $30 to $35. As the work is nearly all piece work, many men make much more.

Hours. The hours are long, averaging fifty-six a week.

Buildings. Factories are for the most part large and have plenty of light and air.

Nationalities. All nationalities are employed.

ADVANTAGES FOR CRIPPLES

1. Good ventilation and light.
2. Employers will take learners.
3. Wages are good.

DISADVANTAGES FOR CRIPPLES

1. Manufacture of mechanical rubber is too heavy work for cripples.
2. Hours are long.

THE PAPER GOODS INDUSTRY

There are no paper pulp mills in New York. One or two mills have pulp shipped to them and make the newspaper product. The trade as a whole is an undesirable one for cripples as the rolls of paper are very heavy, and the machines in many branches are high powered and dangerous. Often an able-bodied man is unable to do the work. Men suffering from shock or weakened in any way would find it impossible as it is often extremely noisy and in many operations heavy and dangerous. All the employers are willing to cooperate and take crippled men wherever possible, but most of them feel there are few opportunities for cripples.

PROCESSES

1. Rotary envelope machine operating. The paper is fed into the machine, gummed, and the envelope completed. Seated work for one-legged men.

2. Envelope cutting. The paper is cut into the forms of the different envelopes on this machine. Seated work for one-legged men.

3. Paper folding (hand). This hand work is only done on special size envelopes as it does not pay to run the machines and have special dies cut to make these special envelopes. Seated work for one-legged men.

4. Imprinting machine operating. On this machine the name of the firm is imprinted in the envelope. Seated work for one-legged men.

5. Hand embossing machine operating. The man doing this work embosses the name instead of imprinting it on the envelope. Seated work for one-legged men.

6. Cutting bristol board. This work is done on a power cutter which cuts the paper into different sizes. Standing work for one-legged men.

7. Lathe operating. This work consists in operating a power lathe and could only be done by a man trained for that line of work. Standing work for one-legged men.

8. Corner cutting. The worker cuts the corners out of the boxes so that they will go together. Standing work for one-legged men.

9. Box staying. The worker puts wire stays or fasteners on either side of the corner of the box to hold the box together. Seated work for one-legged men.

10. Cutting and creasing. The worker cuts grooves in the cardboard, which is then folded along these grooves to form the box. Seated work for one-legged men.

11. Gumming and banding. The worker merely gums the bands that are put around envelopes in packages of twenty-five each. Seated work for one-legged men.

12. Black bordering. This work is all hand work and is done on envelopes and paper to make mourning stationery. Seated work for one-legged men.

13. Press feeding. The man feeds the paper to the press that prints the corner impression on the envelope. Standing work for one-legged men.

14. Eyeletting and disc machine operating. This work consists in perforating holes in tags

and inserting eyelets and discs to protect the holes. Standing work for one-legged men.

15. Rolling machine operating. Consists of making wall paper into rolls ready for the purchaser. Possible work for one or two leg amputation cases.

16. End lapping. This operation is in connection with the rolling machine; the end is folded in after the given number of yards are rolled on the bolt. Seated work for one or two leg amputation cases.

17. Tiering machine operating. The worker merely helps the man who makes the hand-printed wall paper. Standing work for one-legged men.

18. Feeding drying press. The work is to attend to the machine that folds and passes the paper over the dryer. Standing work for one-legged men.

19. Watching reel on the embossing machine. The operation consists in pulling the paper from the embossing machine a given distance before the next impression is made. Work for one-legged men.

20. Mounting signs, ads., etc. All the work is very heavy. No positions for either a leg or an arm cripple were found. Factory conditions are very good, but the work seems impossible, and machines are dangerous. Unskilled work is done by women.

POSSIBILITIES FOR ONE-LEGGED MEN IF PROVIDED WITH ARTIFICIAL LIMBS

Envelope Factory

SKILLED

Process	*Weekly Wage*
Rotary envelope machine operating	$12–$18 up
Envelope cutting	12– 18 up
Cutting machine operating	12– 18 up
Paper folding (hand)	12– 18 up
Paper folder press operating	12– 18 up
Imprinting machine operating	12– 18 up
Hand embossing machine operating	12– 18 up
Cutting bristol board	12– 18 up
Lathe operating	12– 18 up

UNSKILLED

Process	*Weekly Wage*
Corner cutting	$12 up
Box staying	12 up
Automatic envelope machine operating	12 up
Cutting and creasing	12 up
Gumming and banding	12 up
Hand folding	12 up
Blacking border	12 up
Packing in the boxes	12 up
Press feeding	12 up
Eyeletting and disc machine operating	12 up

PAPER BOXES

Process	*Weekly Wage*
Wrapping packages	$12–$14 up
Press feeding	12– 14 up
Stamping machine operating	12– 14 up
Hand work on boxes	12– 14 up
Slitting paper	12– 14 up

PAPER BAGS

Process	*Weekly Wage*
Packing	$12 up
Roll press feeding	12 up

(Noise in both processes is deafening.)

WALL PAPER

Process	*Weekly Wage*
Rolling machine operating	$12–$14 up
End lapping	12– 14 up
Tiering machine operating	12– 14 up
Feeding drying press	12– 14 up
Watching reel on the embossing machine	12– 14 up

MANUFACTURING SAMPLE CARDS

Process	*Weekly Wage*
Power cutting machine operating	$12–$25
Bronzing machine operating	12– 25
Compositor of type (skilled)	20 up
Book binding	12– 25
Casing machine operating	12– 25
Wire stitcher machine operating	12– 25
Cutting samples (skilled)	18 up

PAPER PATTERNS

Process	*Weekly Wage*
Clerical workers	$14 up

(Inexperienced men will not be taken. Most of work is done by women.)

CUTTING AND BOXING STATIONERY

Process	*Weekly Wage*
Wrapping packages	$14–$15
Envelope machine operating	12– 23
Press feeding	16– 18
Ruling machine operating	16– 18
Stamping machine operating	16– 18
Stock-keeping	16– 18
Tipping tablets	$9
Wire stitching	9
Tipping on books	$10–$11
Stripping machine operating	10– 11
Staying machine operating	10– 11
Automatic box machine operating	10– 11
Gluing	12– 14
Hand work on boxes	$15
Corner cutting	15
Scoring	15
Slitting paper	15

WORKING CONDITIONS

Union. The trade is not strongly unionized.

Wages. Generally the wages are good, ranging from $10 or $12 to $25 a week for unskilled work; for skilled work in some of the branches from $20 to $40 a week.

Physical conditions. Generally good.

Nationalities. All nationalities are taken in the various factories.

ADVANTAGES FOR CRIPPLES

1. Some of the work is very skilled and pays very well.
2. Most of the factories are pleasant places to work.
3. The envelope factories have a number of operations possible for cripples.
4. All factories take learners.

DISADVANTAGES FOR CRIPPLES

1. The majority of the work is too heavy.
2. There is a great deal of machinery that is high powered and dangerous.
3. The unskilled work pays a very low wage.
4. Much of the light work is done by women.
5. Many of the factories are noisy.

THE SHOE INDUSTRY

As there are 300 different processes in the shoe industry the field for employment is unusually varied. The trade is not seasonal. Trade conditions are good at present and no decrease is expected after the war. Most of the work is done by machine, though the finer grade shoe demands some hand work. From 50 per cent. to 75 per cent. of the work is seated. About 50 per cent. of the employees are men.

Most employers are willing to take learners, and all agree that it would not be possible for a man to learn the shoe trade except by entering the factory. Most of the workers have gone up through the whole process. The fact that the men learn so much of the trade increases their interest in the work they are doing.

PROCESSES POSSIBLE FOR ONE-ARMED MEN OR ONE-LEGGED MEN

1. Folding. The man sits at a table on which is placed the lining of a shoe. He folds the edges over with one hand and taps on them with a hammer. This hammer could be fastened into a work hand and he could make as much speed as a two-armed man. The folder never puts his hammer down, removing the finished piece with the hand which did the folding. Wages, $18 to $20 a week.

2. Leveling. The man stands in front of a large machine. He might possibly be seated but could not do the work so well. This machine has two parts, which work alternately so that he puts on first one shoe and then another. The shoe is put on a form with the sole up. The man then pushes a lever with his foot. This moves the shoe forward and two heavy rollers pass over the sole, leveling it. While this shoe is under the rollers, the other form comes toward the man, who then puts a shoe on it. This, in turn, passes under the rollers and the first shoe comes back to be removed. This machine

is somewhat dangerous because men who are not careful can get their hands caught under the rollers. One employer said that he would hesitate to employ a cripple here because of the chances, but, on the other hand, he asserted that a one-armed man was in no more danger of being injured here than a two-armed man, and the work could be done just as efficiently and just as quickly by a one-armed man as by a two-armed man. Wages, $20 to $25 a week.

3. Bottom filling. The man sits on a stool in front of a rack of shoes. He lifts down a shoe with his left hand, and places on the shank a little extra piece of leather and metal. He then fills his mouth with nails, takes a hammer in his right hand, and puts nails on the top and bottom of the little extra shank piece. This he does without moving the position of his left hand. He then puts down the hammer and takes up a broad spatula covered with filling material which looks like a mixture of ground cork and glue. He covers the bottom of the sole with this sticky substance and puts the spatula back in the pail. He then puts the shoe back on the rack with his left hand. The last motion was the only time he used his left hand, and this could have been done with the right hand. This means that an artificial work hand designed to hold a shoe would make it possible for a one-armed man to do the work as efficiently and quickly as a two-armed man. Wages, $18 to $20 a week.

4. Last Picking. This work takes brains and legs, but only one arm. The man takes cards which are given him in the various departments and goes to the storeroom, selects the lasts according to the numbers on the cards, puts these little wooden lasts on to a rack, and wheels them to the proper workmen. The racks are light and easily moved. This could, therefore, be done, of course, by a one-armed man. Wages, $12 to $18 a week.

5. Leather repairing. The man who has a good eye for color and some artistic ability can make more than $20 a week at this work, and such men are so difficult to obtain that there is always a demand in the market for them. These men hold a shoe in the left hand, take a brush in the right hand, dip the brush into a bottle of some kind of dressing and touch up the shoe. The left hand does not need to make any motion at all. Therefore, an artificial work hand, made the right shape to hold a shoe, would make it possible to do this work as efficiently and quickly with one arm as with two. Wages, $12 to $16 for patent leather; $12 to $20 for colored shoes.

6. Stock checking. This work is often done by girls but could, of course, be done by a one-armed man. Wages, $10 to $12 a week.

7. There are, of course, office positions,—stock clerks, etc.—open to one-armed men, but these would come under the general head of stock clerk and clerical work rather than under the head of shoes.

It is not possible to describe all the processes which are open to one-legged men. There are 300 processes in making a shoe, and usually about seventy-five per cent. of this work could be done by one-legged men. The most highly skilled and best paid workers would be the vamp stitchers, who get as much as $40 a week; and cutters, who get as much as $40 or even $50 a week.

In regard to the work of cutting, all employers agree that it could be done by one-legged men because a high stool could be used, but employers disagree as to the possibility of employing a one-armed man in this. Some of the employers in the largest factories believe that one-armed men could be so used.

POSSIBILITIES FOR ONE-LEGGED MEN

Process	*Weekly Wage*	
	Minimum	*Maximum*
Coloring	$10	$12
Sewing machine operating	12	30
Bench work	10	12
Repairing leather (putting on dressing)	10	20
Pasting	10	12
Folding	18	20
Bottom filling	18	20
Lasting	15	20
Cutting	20	35
Designing	25	40

POSSIBILITIES FOR ONE-ARMED MEN

Process	*Weekly Wage*	
	Minimum	*Maximum*
Coloring the edges	$10	$12
Leather repairing	10	20
Pasting edges of uppers	10	12
Folding	18	20
Leveling	20	25
Bottom filling	18	20
Last picking	12	18
Packing	10	12
Cutting (skilled only)	20	35
Designing (skilled only)	25	40

WORKING CONDITIONS

Union. Most of the work in shoe factories is not unionized, though there are one or two local unions.

Wages. Wages in the shoe trade vary greatly. Unskilled labor brings from $10 to $12 a week, skilled labor from $20 to $45.

Hours. The hours are long, nine or ten a day.

Buildings. Most factories are four stories high. The work on the shoe begins on the top floor and, as the process is continued, the shoe is sent down until it is packed and shipped on the first floor.

Light and ventilation. These are usually good. In most factories the workmen sit on benches facing the windows and the center of the floor is occupied by light movable racks containing the shoes.

Fire. Fire risk is not great, as there is not much inflammable material used. The movable racks in the center of the floor, however, would be a menace in case of fire.

Safety. Most of the machinery is not dangerous. Some employers consider the compensation law a drawback; but most of them feel that the danger is so slight as to be a negligible factor in the employment of cripples.

Nationalities. All nationalities are employed in the shoe trade but the Italian predominates.

ADVANTAGES FOR CRIPPLES

1. The work is not dangerous.
2. About seventy-five per cent. of the work can be done seated.
3. The sanitary conditions are usually good.
4. Machinery can be adjusted for use by cripples.
5. There are so many different processes that it is possible to find many different places for cripples.
6. Learners are taken in all factories.

SHEET METAL GOODS

As a whole the metal industry is stable, and at present seems to be in a flourishing condition, due to the fact that the government requires a great quantity of metal goods. The only branch of the trade that is not doing well is the Lighting Fixture trade.

All the employers are willing to take crippled soldiers, but most of them seem to think that there are only a few processes at which a one-armed man could work. They admit, however, that a one-legged man could work at almost all processes. The employers seem to feel that most of the processes could be learned inside of six months.

Work in the metal trades would not be good for any one suffering from nervous strain as there is a great deal of noise. Even the bench work is not quiet, for there is usually heavy machinery near by. The trade would also be bad for anyone suffering from lung diseases or lung wounds as in the buffing, polishing, filing, etc., there is a great deal of powdered metal in the air.

PROCESSES

1. Buffing. Workman is obliged to stand and hold metal piece against large automatic wheel. The work is possible for a one-legged man if he can stand. Wages, $12 minimum, $18–$25 maximum.

2. Polishing. Work is similar to buffing.

3. Nickel plating. Metal articles are strung on wires and hung on a metal bar in large vats of acid; an electric current is run through the metal bar. It is standing work but possible for a one-legged man.

4. Making wire link bedsprings. The wire, coiled on a spindle, passes through a machine which cuts it into short lengths, makes a hook at each end, and fastens the lengths together to form a long chain. These machines are auto-

matic. One man takes care of all the machines on the floor and keeps them in repair. A man who had lost a foot could do the work if he could stand all day. The links thus made are fastened into the riveted frame by hand. This work could be done by any one-legged man as it requires no lifting and little walking. It could not be done by one-armed men, as it necessitates using the fingers of both hands.

5. Making woven-wire springs. The long spirals of thin wire are woven together by a simple machine operated by one foot. For sanitary reasons these springs have fallen into disfavor, and fewer of them are made each month. In one factory visited only two men are employed on these machines for part of each day. The manager predicts that such springs will soon be unknown.

6. Power machine operating. In the manufacture of couch hammocks, the covers are sewed on power machines, furnishing work to all the operators possible to obtain during the busy season. The machines can be run by one-legged men. Speed is necessary as the work is piece work. About two months are required to learn.

7. Fastening eyelets in hammocks. Brass eyelets are inserted in the sides of hammocks, so that the cords may be strung through them. This is done by a simple machine operated by one foot. It could therefore be done by one-legged men, and possibly by one-armed men. However, two men working two hours each day can handle the output of the factory visited. The work is seasonal.

8. Riveting. Pieces are riveted together by hand with riveting hammer; holes are punched in with riveting stake. Standing work for one-legged men.

9. Pattern making. Consists of building patterns for metal castings. Each pattern is a full-sized model of the piece to be cast and is usually made of wood. The tools used are the same as those of woodworkers, and the work is similar to cabinet-making. Ability to read blue prints is an essential requirement. Standing work for one-legged men.

10. Metal spinning. This is very heavy work and should not be attempted by a man who is not strong. It consists of putting a flat metal sheet on an automatic revolving disc and holding a long iron bevel against the edge so that the metal is gradually spun into a concave piece. Standing work for one-legged men.

11. Metal cutting. This is done by an automatic machine with large shears, somewhat similar to a power press. Standing work for one-legged men.

12. Automatic power press (cutting designs). A right-foot pedal brings down the press, which must be fed with both hands. Seated work for one-legged men.

13. Automatic power press wiring. Similar to above except that wires are put into curled edge. Seated work for one-legged men.

14. Japan varnishing. Consists of varnishing cans, boxes, etc. Seated work for one-armed man.

15. Torch soldering. Same as ordinary soldering except that torch is used. Seated work for one-armed man.

16. Cutting machine press. This is a foot power press which shears the tin. Standing work for one-legged men.

17. Wiping out cans. Consists of drying cans after they have been washed out. Standing work for one-armed man.

18. Eyeletting. Is done by an automatic machine which perforates holes in metal. Seated work for one-armed men.

19. Punching. Similar to eyeletting. Seated work for one-armed man.

20. The machine is a revolving disc upon which a piece of metal is placed. Cutting tool is held against the edge and bevels it. Seated work for one-legged men.

21. Auto-machine press cutting. Tin sheeting is shoved into the cutter. A right foot pedal is used to bring down the press which chops the metal into pieces. Seated work for one-legged men.

22. Wire is put through rolled edge of molds to reinforce them. Seated work for one-legged men (bench work).

23. Repairing molds. Bench work (seated) for one-legged men.

24. Casting molds. Consists of packing damp sand about a pattern in such manner that when pattern is withdrawn, a cavity called "the mold"

is left in the sand. This mold is then poured full of molten metal which forms the piece to be cast. The work is sometimes done by machines. Seated work for one-legged men.

25. Casting hinges. Similar to above process. Work for one-legged men.

26. Filing. The piece is held in one hand and the rough edges filed off with a hand file. Seated bench work for one-armed men with work arm.

27. Soldering. The piece is held with one hand and the solder applied with a long bar. Seated bench work for one-armed man with work arm.

28. Die-making. This work calls for a high degree of skill. A machinist must have special knowledge and skill in designing, shaping, and sharpening tools. It is very exact work and has to be measured up to the pattern. It consists of taking a piece of metal and cutting it down by means of various machines into given shape. Standing work for one-legged men.

29. Screw machine operating. In some screw machines the faces of the revolving tool-holding device called a turret hold tools of different kinds. In others the turret instead of being square or hexagonal is shaped like a drum. As each operation is completed, the drum, with the tools it carries, backs away from the piece, and with a slight turn brings the next tool into position. Usually the stock is fed to the machine in long bars or rods. Standing work for one-legged men.

30. Power press operating. A large press, which works with a foot pedal but is sometimes automatic, cuts the metal with its blades. Standing work for one-legged men.

31. Jig sawing. A metal saw like a hand tool saws the metal into small pieces. Seated work for one-legged men.

32. Assembling parts. Seated work for one-armed men.

33. Planing. The piece is firmly secured on a flat bed or table which moves backward and forward under a stationary tool. For light work on plane surfaces a shaper is used. The principle is the same except that the tool moves while the piece is stationary. Standing work for one-legged men.

34. Lathe machine operating. The piece to be turned is mounted on a revolving spindle and the cutting tool automatically moves along the surface of the revolving piece. In a hand lathe the cutting tool is held against the piece by hand. Standing work for one-legged man.

35. Milling machine operating. The operating principle is the same as that of a circular saw. The machine is provided with one or more circular cutters having a number of teeth or cutting edges, each of which removes a chip of metal from the piece as the cutter revolves. It is provided with graduated dials which permit of accurate adjustment to less than one thousandth of an inch.

36. Forming tools. This work calls for a high degree of skill and practical knowledge of designing, shaping, and sharpening tools. Seated bench work for one-legged men.

37. Grinding machine operating. The work is performed by a grinding wheel of emery or corundum. Only a slight thickness of metal is removed, the piece being first reduced to the desired size on a lathe or milling machine and then finished by grinding. A shaft for example is turned in the lathe to within a thirty-second of an inch of its proper diameter, and then transferred to the grinder which brings it down to the exact size and leaves a perfectly smooth surface. Seated work for one-armed men.

38. Assembling. As its name implies, assembling consists in assembling various parts. Seated bench work for one-armed men.

POSSIBILITIES FOR ONE-LEGGED MEN

Machine press hemming
Cutting tin (foot-power press)
Buffing
Polishing
Silver plating
Die-making
Threading (beveling edge)
Welding machine
Press work
Wiring (bench work)
Repairing molds
Casting molds
Casting hinges
Planer
Lathe machine
Milling machine
Forming tools
Grinding machine
Assembling
Stamping
Screw machine
Power Press
Jig sawing
Pattern making
Metal spinning
Metal cutting
Engine lathe
Engine milling
Drop press
Riveting frames
Sorting tin
Rolling tin (power press)
Foot press stamping
Power press stamping

POSSIBILITIES FOR ONE-ARMED MEN

Soldering
Testing cans
Trimming
Riveting covers
Shearing (power press)
Feeding automatic machine
Straightening molds
Forming tools (work arm necessary)
Sand papering
Wiping out cans
Touching up cans
Air brushing
Forming tools
Flattening
Eyeletting
Punching holes
Grinding machine (work arm necessary)
Jig sawing
Foot press stamping

WORKING CONDITIONS

1. Union. There are several large unions in the metal industry, but a great many of the factories visited had open shops.

2. Wages. Generally speaking the wages are high, ranging from $10 to $15 for unskilled work and from $20 to $45 for skilled work.

3. Buildings. Conditions in new factories are excellent, but there are a great many smaller factories in old buildings, where there are no elevators and where conditions in general are very poor.

4. Nationalities. Almost all nationalities are taken. Only a few negroes are employed. Employers seem to feel that white men do not like to have negroes working with them.

ADVANTAGES FOR CRIPPLES

1. A good deal of the work is bench work and is seated.

2. It is practically non-seasonal, except in the Lighting Fixture trade.

3. The wages are high.

4. Although some of the work is very skilled, the majority of employers interviewed agreed that a man could learn most of the processes in five or six months.

5. Most of the employers are willing to take learners.

DISADVANTAGES FOR CRIPPLES

1. There is a great deal of heavy machinery, such as power presses, which are rather dangerous, and the spinning machine, which is extremely heavy and tiring to work at.

THE SILK INDUSTRY

The silk industry is not recommended for cripples. The greater part of the work is piece work, which entails haste and strain, and the rooms are full of swiftly moving machines which make the noise and vibration very bad. The air and ventilation in the large mills are good, but most of the workers seem to feel the strain of the conditions. Moreover, most of the work is done standing, and it all requires two hands.

An objection to taking on learners in the industry is that the material is very valuable. Manufacturers, for that reason, prefer not to employ workers who will waste it. While it might be possible to place learners, they would have to pass a long period of apprenticeship before they could earn a good wage. The few simple processes are all done by girls earning about $15 a week.

For skilled work wages vary from $15 to $25 a week. A very skilled man working at high speed can make as much as $35, but this is unusual. There are jobs at inspecting for $8 and $10 a week.

PROCESSES

The following is a description of the processes through which the product passes. This full description is given in order to illustrate the statements made above as to the inadvisability of placing cripples in this trade. The description which follows applies to large mills and refers to silk by the yard and also to ribbons. The same obstacles are found in all branches of the industry since they are inherent in the industry itself.

1. The silk comes into the mill in skeins which are put on small wheels and wound onto spindles. This work is usually done by girls, each girl tending several machines. The work is not difficult, but it is a strain on the eyes as the threads must be carefully watched. Two hands are needed for it because it is necessary to disentangle the fine threads and sometimes to retie them. It is necessary for the worker to stand as he must walk back and forth to the different machines. The noise here is not excessive, but the wages are not high, being about $15 a week.

2. The silk is then wound from some of these spindles onto quills, or wooden pegs that look like bobbins, about six inches long. These are used later for shuttles in the weaving department. These quills are usually tended by girls, and the work is very much like the work in the winding department. The wages here are also about $15.

3. The rest of the spindles are then taken to the wrapping department and put on large machines which hold from 50 to 1000 spindles. The threads are drawn off all of these at once and wound around a huge wheel ten to twelve feet high. This machine is run by a man who stands between the spindles and the big wheel. He must have both hands because he watches these threads as they come, picks out all flaws, and ties the broken threads. He must have both feet because he stands on one leg and runs a treadle with the other. This treadle turns or stops the big wheel so that the man may have a chance to adjust any flaws. This process makes a wide layer of silk threads. The man then goes to the other end of the wheel and winds this layer onto a huge roll. At this task he sits down. He must have both hands in order to adjust the threads, but he could do this part of the work with one leg. If, therefore, the work could be divided it would be possible to use a one-legged man. This is skilled work and is piece work. Men make as high as $35 a week.

4. Next the material goes to the twisting department. Twisting could be done by a one-legged man or even by a man with no legs and is the one opening in the silk industry for a cripple. However, as there are not very many men employed in this branch even in a large factory, it does not give much opportunity. The employee sits in the middle of a frame with the threads passing across the frame in front of him. He twists the threads together by hand and winds them slowly on a roll. This is all hand work and of course two hands are needed in order to sort out and to twist the threads. As it is very fine work, only skilled workers are employed. This is, therefore, an obstacle to the employment of cripples since even the one job that is open to a cripple is open only to a skilled worker.

5. The material, which is now the finished warp, is put on the weaving machine and the quills described above are used as shuttles, weaving silk out of this warp. This is the heaviest work in the silk industry. The noise is deafening and the vibration excessive. Both men and women are employed in this kind of work. It is all piece work and the employee can make as much as $30 a week, if he works at great speed. Two hands are required to take care of these machines which are very complicated. It is usually necessary to stand all of the time, though in some factories stools are provided. As a man must attend several machines, it would not be possible for him to sit much. This is highly skilled work and would not be open to a learner. A man with a crippled leg might be employed here if he could stand all the time, but the general strain is so very great that it would be very undesirable work for him.

6. The finished material is next taken to the drying room. Here there is a huge machine tended by two men. The silk is passed from one roller to another over hot pipes in order to make sure that it is perfectly dry. Two hands are needed to manage the machine as it is complicated, but a one-legged man could do it if he could stand most of the time.

7. The silk is then given to employees who measure and inspect it. This work is seated and would be possible for either a leg or an arm cripple. The wages are only $9 and $10 a week.

8. The last process is packing the bolts of silk in trunks and boxes. Two hands are necessary for the work. A man slightly lame might do it, but a severely crippled man would be handicapped since he must walk about with the bolts in his arms.

CIGAR MANUFACTURE

The cigar-making trade offers good opportunities for handicapped men in that most of the operations are performed seated. Men using crutches, men with one leg, and even men with no legs can earn a living at this trade if it can be taught to them. There is not much chance of forming classes in the factories unless the trade unions can be induced to cooperate in this respect. However, many of the employers will take individual learners and have no objections to handicapped men.

There is no chance for one-armed men, or even for men with missing fingers, as the work requires special skill with the hands. The eyesight also must be unimpaired.

PROCESSES

1. Sorting and dampening. The tobacco is delivered to the factories in large bales, in which the leaves are packed dry. In the sorting and dampening room, the bales are opened, and the tobacco sorted into different grades. The leaves are then thoroughly moistened, partially dried, and packed together damp. A few large factories have sprinkler systems installed, but in most factories the dampening process is done by means of pails and tubs. In the small factories, the owner often prepares the tobacco and distributes it.

This process can only be performed by active men with the use of arms and legs. A one-armed man might distribute material, but could not earn a living wage.

2. Stripping. This is usually done by hand, but some of the large factories have installed stripping machines, not as a labor-saving, but material-saving device. The work is almost always performed by girls or women on account of their deftness and lightness of touch.

The stripper sits on a stool facing a tub in which are packed the damp tobacco leaves. She selects a leaf, quickly smoothes it out, seizes the larger end of the midrib with thumb and fingers of the right hand, and with a jerk removes it entirely, thus dividing the leaf into two parts. At the same time, with a deft motion of the left wrist, she twists the leaf around the left hand to keep it from tearing while the midrib is being removed. The two half leaves are piled on another stool and the midribs thrown on the floor at her side to be carried away by another worker.

There is a great demand for strippers. The process could be performed by men with one leg or none, but the wages are small.

If the machine is used, the stripper sits facing the machine, which she starts by pressure of one foot. The leaf is smoothed out and passed, large end first, over a roller, in the middle of which two thin sharp knives set close together neatly cut out the midrib, which falls into a pan below. The half leaves are piled at the back of the machine. The machine is easy to run and is not dangerous. It could be run by a one-legged man.

Strippers are sometimes paid by the piece, more often by the week. Wages average $12 a week.

3. Bunching and binding. This and the following process complete the actual making of the cigar. With the best quality of material, the two operations are done by the same worker and always by hand. Bunching and binding are sometimes done by machine and sometimes with the help of a mold.

If done by hand the workers sit side by side in a long row facing a counter, divided by a three inch partition so that each worker has a portion for himself. His utensils are a smooth board about a foot square, a thin sharp knife, a tiny cup of paste, and a clip such as is seen in retail cigar stores. The tobacco is passed out in assorted piles, filler or imperfect leaves, crumpled leaves, and binders, or practically perfect, smooth leaves of fair size. The worker prepares the binder by laying it on the board and cutting from it a roughly outlined oblong. He then gathers in the left hand enough of the filler leaves to make a cigar, presses them together, lays them on the binder and with a quick motion rolls them into a cylinder with the binder outside to hold the filler leaves. If he is to complete the cigar he goes on to the next operation, but if he is working at team work, the unfinished cigar passes to other hands.

If molds are used, the filler, with the binder outside, is placed in a mold, which is a board two inches thick with several hollows shaped like half a cigar. A similar board is placed on top, and the two clamped together until the tobacco is partly dried and molded into shape ready for the wrapper. With these molds, smaller pieces can be used as filler than in the hand-made process.

If the bunching and binding machine is used, the worker sits facing the machine, which he controls with one foot. The binder is placed and immediately seized by the jaws of the machine, which at the same time releases enough tobacco to make a cigar. Both pass through the machine and come out a roughly made cigar ready to be wrapped. This machine uses even the tiniest scraps for filler and turns out cigars of cheap grade at a rapid rate. A one-legged man with the use of his hands could run the machine.

Wages average $22 a week for the hand work and somewhat less for the machine-made and molded cigar. All work is paid for by the piece.

4. Wrapping. This is the artistic operation in cigar making. It can be done only by skillful fingers and by men with good eyesight. Men with one leg or no legs can learn, provided they have the necessary manual dexterity.

The wrapper is a perfect leaf of good grade tobacco. The worker lays the leaf on the board and cuts from it an oblong. He then cuts each end of the unfinished cigar with the cigar clip, which also measures the length of the cigar. Next he places the cigar at one end of the wrapper, and with the use of the board, the palm of the hand, and finally the fingers, he rolls the wrapper spirally, completely covering the cigar. The ends are fastened with a tiny bit of paste, and the cigar is finished.

In some factories the wrapping is assisted by a simple machine, operated by one foot. It has a suction plate which holds the leaf flat and smooth while the worker wraps it around the cigar.

"A good cigar-maker is an artist," say some in the trade. They contend that a man cannot learn this part of the trade after the age of twenty. Others guarantee to teach it to any man of ordinary intelligence in six months.

Wages average $25 a week. The work is always hand work and always piece work.

5. Banding or branding. In some factories cigars are wrapped with a narrow band, or the name of the factory is branded on the cigar. Both operations are done by machines, usually run by girls, though they could be run by one-legged men. Wages average $12 a week. Not piece work.

6. Packing. This can be done only by men with active use of arms and legs, and excellent eyesight. The cigars are sorted as to color and packed in the familiar cigar box. Wages average $35 a week. Piece work.

WORKING CONDITIONS

1. Union. There is an international cigar-makers' union of considerable strength. A few factories are completely unionized, but there are many more run on the plan of 'open shop'.

2. Wages. The average wage in the chief operations is about $20, with a minimum of $15 and a maximum of $35. The highest paid process is that of packing, wages averaging about $35, but this work is out of the question for handicapped men. The union wages vary from $12 to $40 per week, according to the grade of tobacco and the skill of the worker. There is little use for unskilled labor; hence the wages are very low, averaging $8 a week.

The work is not seasonal, and an experienced worker never lacks employment.

3. Hours. In union shops, the hours are from 8 a. m. to 5 p. m. with an hour at noon, and from 8 a. m. till 12 noon on Saturday. In non-union shops, the hours vary, and there is a great deal of overtime. The usual hours are from 7:30 a. m. until 6 p. m.

4. Number of factories. The trade is carried on in about 600 factories scattered throughout the boroughs of Manhattan and Brooklyn. About 500 of these factories employ fewer than 20 men each.

5. Types of buildings. The buildings vary from the small crowded room behind the retail cigar store to the huge modern concrete building. In the latter are freight elevators, automatic fire-alarm systems, ventilating systems, etc. The former, possessing none of these advantages, are fortunately almost always on the street floor.

There was no attempt at welfare work, such as lunch rooms, rest rooms, etc., in the factories visited.

6. Physical conditions. In the large factories the light, ventilation, space, and cleanliness are

good. The small places are crowded and poorly ventilated.

Men and women work side by side in the small factories. In most of the large factories they work on separate floors or at opposite ends of a large room.

There is no dust or noise. The smell of tobacco is all-pervading though it is claimed to be harmless, and not unpleasant except at first. Most of the workers bite the ends of the cigar to help shape it, instead of using the knife. As a consequence their lips are constantly stained. Many of the men and some of the women chew the tobacco.

7. Nationalities. There is no predominant nationality among the men, but practically all are foreigners of a low, rough type with a goodly sprinkling of negroes. Employers would welcome a better class, but it is doubtful whether more intelligent types could be made contented. The women are almost invariably Italian.

DRUGS AND CHEMICALS

The drug and chemical industry varies so greatly in the individual factories that it is difficult to make a general report. Under the general head are included the manufacture of numerous kinds of medicines; medical agents, such as chloroform, ether, iodoform, etc; toxins and serums used in cases of diphtheria, tetanus, typhus, etc.; industrial chemicals, as alcohol, various acids, gasolene, benzine, etc.; household necessities, such as extracts, baking powders, etc.; and toilet necessities, as talcum powder, perfumes, etc. With each article manufactured, the processes vary. It seems better, therefore, to classify the industry according to kinds of work rather than by distinct operations or processes.

KINDS OF WORK

1. Compounding and experimenting. This work is done largely by trained chemists. It is the technical part of the industry and consists of the combining of elements to form compounds. It is sometimes dangerous, owing to the possibility of explosion, or to the rapid reaction of the various elements when combined. It is often unpleasant because of dust, smells, etc. It offers no possibilities for handicapped men.

2. Testing. This is usually done by men trained in the factory. It requires care and thought, but little if any technical knowledge. It includes careful weighing of samples and testing these samples by heat or other agents to determine the exact constituents of the compound. It could be done by one-armed men, and would be possible for one-legged men, since the worker sits part of the time. Only one or two men are used in each factory in this capacity. Wages, from $15 to $20 a week.

3. Sifting. Many of the powders must be sifted during the course of manufacture. This is generally done by hand, sieves of varying mesh being used. It could be done by one-armed men, but since the worker is often compelled to inhale the powder, men are seldom kept at this work for any length of time. Wages average about $15 a week.

4. Heavy machine work. Under this head is included all the work of running stills, presses, and vats. The men are obliged to lift and carry heavy pails, and to empty them in huge vats, sometimes to climb ladders. In these vats, the material is heated to the boiling point, during which process it is stirred with long poles or paddles. The men often are compelled to work in overheated, steam-filled rooms, and make their way through narrow passages between the vats and mammoth presses. The work is impossible for any but strong, robust, able-bodied men.

5. Light machine work. There are many light machines used in this industry, for example, those which turn out tablets or pills in the manufacture of drugs. The material is poured into a funnel-shaped receptacle, through which it passes into the machine and comes out in the form of tablets or pills which drop into boxes or cans below the machine. The worker starts the machine with one hand, and it is his business then to watch the machine, stopping it when the material is used up. A trained machinist keeps all these machines in repair. The men are required to clean the machines, but it could all be done by one-armed men. Wages, from $17 to $25 a week.

6. Packing. The tablets, pills, powders, etc., are put into bottles, boxes, or cans, being either weighed or counted. The work is sometimes done by hand, sometimes by light machines. It is performed seated, and is usually done by girls, but it could be done by men with one leg, or no legs at all. Wages, from $8 to $15 a week.

7. Labeling. After the bottles, boxes, or cans are filled, the labels are pasted on the outside. This work is performed seated, and offers possibilities, therefore, for men with one leg, or no legs. It is unskilled work, usually done by girls. Wages, from $8 to $15 a week, piece work.

8. Crating. In most instances, the boxes are nailed together in the factory. They are light and easily handled. A one-armed man could do the work if provided with an artificial appliance for holding a hammer. Occasionally the covers are nailed on by a nailing machine which could easily be managed by a one-armed man. The box, about one foot square on the end by eighteen inches in length, packed with cans or bottles, is passed along a runway under a chaff bin where the spaces between the contents are filled with chaff. At the end of the runway a man receives the box, folds over the paper lining, places the cover, and slides it along the table toward the nailing machine, where another worker receives it. This man pushes the box under the arm of the machine, which descends, and with one stroke puts in several nails. While the arm of the machine is going up, the worker turns the box, and when it agains descends, the other end of the cover is nailed on.

Some articles are packed in barrels, and the interstices filled with chaff or sawdust. Since the filling material is so light, this work could easily be done by one-armed men.

In some factories, narrow metal strips are tacked along the edges of the boxes after they have been nailed shut. This work could be done by a one-armed man if provided with an artificial appliance for holding a hammer.

9. Special work. A novel department of the industry is the care and nurture of live animals, such as horses, pigs, guinea-pigs, which are used in connection with the preparation of toxins. This partakes somewhat of the nature of farm work. It is done under highly trained direction and the animals are given the best of care. The work could be done by one-armed men or by one-legged men if the latter were not too badly disabled.

WORKING CONDITIONS

1. Wages. The wages in the industry vary from $8, the weekly pay of the unskilled girl worker, to $30 weekly for skilled work, and of course to a much higher sum in those positions where technical knowledge is required.

The work is not seasonal, and there is a constant and growing demand for workers of every kind.

2. Hours. Employees work from 9 to 10 hours daily, and from 50 to 54 hours weekly.

3. Location of factories. The drug and chemical industry is scattered over the city in various localities usually along the water front.

4. Types of building. The buildings are, for the most part, modern structures of several stories, well lighted, heated, and ventilated. They are equipped with freight elevators, fireproof stairways, fire-alarm systems, etc. Some, however, particularly those in which industrial chemicals are manufactured, are low wooden buildings, spread over an extended area.

5. Physical conditions. There are unpleasant features connected with the industry, such as dust-laden atmosphere and disagreeable odors. Fans and blow-pipes are used in many places, partially to alleviate the first, but there is no remedy for the second.

In the making of certain compounds, the fumes are poisonous, and the worker is obliged to wear a mask or towel tied across the lower part of the face. There is more or less danger of explosion, or of too rapid reaction causing the spilling over of heated substances. The men who work about the huge vats must be exceedingly careful of their footing, as a fall into one would mean death by scalding.

6. Nationalities. There is no predominant nationality among men or women. The workers vary in intelligence from the low, foreign type to the highly skilled workman and trained chemist.

THE CANDY INDUSTRY

The future of the candy industry after the war is so promising that, on first thought, it would seem an excellent industry in which to place cripples. Several stock brokers have called the attention of their customers to the fact that the candy industry can be considered one of the stable industries after the war for the following reasons:

1. The steadily increasing consumption of candy per capita.

2. The fact that wherever the sale of liquor is curtailed, the consumption of candy increases from 15 per cent. to 50 per cent.

3. The chocolate ration of the soldier and sailor will establish a candy habit. This point of view has been corroborated by several large candy manufacturers.

The candy industry is suffering from the shortage of labor as greatly as other industries. In few instances, however, have any factories thought of employing cripples and the general attitude was that the work was not possible for cripples. This may be due to the fact that, in many of the factories which make mainly chocolate products, the work is very heavy and requires considerable lifting. Women do almost all the light work.

The president of the State Candy Manufacturers' Association was interviewed. He did not consider that there were many opportunities for cripples in the candy trade unless they were willing to do the light work done by women and receive women's wages—from $12 to $15. According to a letter to an investigator from the *International Confectioner*, a trade paper, the industry as a whole, including jobbers, etc., employs anywhere from 150,000 to 200,000 people. There are many places that could be filled by men who have been crippled in the leg or legs, but none for those with crippled hands.

In almost every factory, there was some work which could be done by one-legged men. In only two factories, did the manufacturers state positively that they could not employ cripples in any of the processes. Opportunities for cripples in the skilled and unskilled work vary greatly. Most of the light work is done by women, although in one of the large factories we were advised that they could employ crippled men putting tin-foil on chocolate. Little of the men's work can be done seated. It requires lifting, standing, and continual moving about. This applies more directly to the chocolate and cocoa factories than to the candy and bonbon factories. In some of the smaller factories, one-legged men could be employed in chocolate molding, dipping, and wrapping of individual candies. This work is seated in the smaller factories. In the larger factories, it is all standing, requires lifting and moving about and is too heavy for cripples. In some of the factories, one-legged or legless men could be employed in the shipping department as stock clerks, etc., where from thirty to forty men are sometimes employed.

It is difficult to describe in detail the processes, as the candy manufacturers seem rather unwilling to take an investigator through the factory. Only five factories were really inspected carefully.

PROCESSES

Chocolate and Cocoa Factories

1. Roasting. The roasting of the bean is done by an automatic machine. The roasted beans are automatically fed into the grinding machine.

2. Grinding. The cocoa bean is ground into nibs in a high grinding machine. The man is obliged to shovel cocoa into these grinding machines. Then the nibs are shoveled into another grinding machine, which pulverizes them.

3. Melting. The pulverized cocoa is then melted down in vats and the cocoa-butter separated from the cocoa. These machines are tended by only one man, who has to walk up and down continually, turning levers on and off. The cocoa is then dried and pulverized again. This necessitates shoveling it into large pans, lifting these pans, and emptying them into a pulverizer.

4. Mixing. Cocoa which has been melted down and not separated from the butter is then shoveled into large pans, and carried over into the mixer, where more cocoa-butter, powdered milk, and sugar are shoveled in.

5. Molding. This mixture is then put into large trays and poured into a long tray-like machine, from which it is again shoveled into a cone-like device which molds it into cakes. (In some of the smaller factories, this work is seated.)

6. Wrapping. These cakes are then carried into a room, where they are wrapped by girls. The powdered cocoa is also put up in tins by girls.

7. Boxing. Lids are nailed on boxes.

8. Assembling boxes. The wooden slabs are placed on a steel plate and the nails driven in automatically. There is a pedal which is used. This is also work which could be done by one-legged men. There are only a few men employed in boxing and assembling of boxes in each factory.

Candy and Bonbon Factories

The only positions that could be surely held by a one-armed man are packing the candies into small boxes and managing the cutting machine. There are some other machines, however, which might be run by a one-armed man with some slight adjustment; for example, in the casting of gum and licorice, small trays filled with flour are put on a machine which automatically presses on this flour and makes molds of various shapes. This same machine then fills these molds with liquid candy. The tray is then lifted out and put on a rack. As these trays are both small and light, they could be managed with one arm. Most of the machinery in the candy factories is so complicated that it would be difficult to manage with only one arm.

There are a number of processes which could be done by one-legged men because it is possible for the worker to be seated. The following are the best of them:

1. Cream manufacturing. The cream is put into a tank and is beaten up by a machine. The tank is fed and emptied automatically, and the worker has merely to attend the machine. He must be on his feet but could do it with an artificial limb.

2. Making stick candy. The material is put on a table twenty feet long, rolled out into sticks, and cut up. The man who does this must be on his feet, but he could do it with an artificial leg. He must, however, be a skilled worker.

3. Pan room work. In this process, the candy which has been dipped is put on trays and dried. The worker must carry these trays a short distance, but the trays are light and a man with an artificial leg could manage it.

4. Bonbon work. This consists in molding the fancy bonbons either by hand or machine. Most of this work is seated and, therefore, possible for a one-legged man.

5. Making almond paste. The almonds are put into a large colander and the steam turned on. Then they are skinned, are put on a table, and sorted by hand. This can be done seated. They are then put into a machine and ground up. The tender of this machine must stand, but the work is light and could be done by a one-legged man. The almonds are then put into a cooker, which automatically beats them into a paste mixed with sugar. This is seated work.

6. Making peanut butter. The material is put into a large tank and ground by a stone machine. This is attended by a man who must be on his feet but the work is not heavy.

7. Making cocoanut roll. This is cocoanut and sugar which is mixed together on a marble slab, rolled into small strips, and cut up by machine. The work is done standing but is light work.

8. Tending press. This work consists of tending a machine which stamps the different candies. The work is light, but the worker must stand.

9. Cocoanut bonbon dipping. The bonbons are put into a wire box which is dipped into a tank of chocolate, raised, drained, and stood on a drier. The worker must stand all the time, but the work is light.

10. Wrapping. This is piece work and requires skill and speed; it is done mostly by girls because their hands are quicker, but if a man were trained or specially adapted to the work he could do it. It is, of course, seated work.

POSSIBILITIES FOR ONE-LEGGED MEN

Process	*Weekly Wage*	
	Minimum	*Maximum*
Chocolate molding (in small factories only)	$12	$15
Dipping	12	15–18
Wrapping individual candies	12	15–18
Boxing	12	15
Assembling boxes	12	
Cream manufacturing	12	
Making stick candy	12	
Pan room work	12	
Bonbon work	12	
Making almond paste	12	
Making peanut butter	12	
Making cocoanut roll	12	
Press work	12	
Cocoanut bonbon dipping	12	

POSSIBILITIES FOR ONE-ARMED MEN

Process	*Weekly Wage*	
	Minimum	*Maximum*
Packing	$12	
Cutting candy	12	

WORKING CONDITIONS

1. Wages. The work is not piece work. The wages are not high. In most factories, the learners average from $8 to $12. The more skilled workers do not get much more than $18 to $25, although in some factories the employers claimed that they paid a few very skilled men from $50 to $100 a week.
2. Hours. Hours are long.
3. Factories. Conditions in the larger factories are excellent; in the smaller ones not so good.
4. Nationalities. The laborers are mostly Italians and Greeks, although employers do not discriminate against any nationality.

ADVANTAGES FOR CRIPPLES

1. The number of learners is not limited.
2. The trade is not seasonal. The busiest times are from August to December, making Christmas candies; and from January to Easter, making Easter candies. There is never a really slack period.

DISADVANTAGES FOR CRIPPLES

1. Wages are generally low.
2. The hours are long.
3. In some instances, the conditions are poor, although in many of the larger factories conditions are excellent.
4. Most of the work for men is heavy and the very skilled work requires years of training and is not as well paid as skilled work in other trades. Many of the manufacturers claimed that it required several years for a man to learn any of the skilled work.

THE CELLULOID INDUSTRY

As a whole the manufacturing of celluloid articles is a very good trade for cripples. The factories are generally pleasant and airy. Most of the employers gave the impression of doing everything possible for the comfort of the workers.

All the employers interviewed were willing to take cripples and teach them in the factories. They were all agreed that there were almost no jobs that leg cripples could not do. A man suffering with lung wounds would not be wisely placed in the buffing or polishing room on account of the dust. There are, however, blowers to take away a great part of the dust. A man without legs or one very much handicapped in getting about should not be in one of these factories on account of the danger of fire.

PROCESSES

Combs, Toilet Articles, etc.

The celluloid comes to the factory in large sheets which are kept in fire-proof vaults. The first operation is the making of the larger articles as trays, etc.

1. Stamping. The sheet of celluloid is heated in hot water to soften it. Then a heavy stamping hammer with the die the proper shape comes down on to the celluloid on the machine plate and presses out the shape of the article. Seated work possible for one-armed or one-legged men. Wages, from $14 a week to $30 and $35.

2. Bandsawing. The work is sawing the celluloid sheets into shapes for frames, clock backs, brush backs, etc. It is seated, and possible for a one-legged man or a one-armed man, if provided with a work arm. Wages, $14 a week up.

3. Circular sawing. The work is sawing the sheets of celluloid into sizes for the various articles. It is seated and possible for a one-legged man or a one-armed man, if provided with a work arm. Wages, $14 up.

4. Pressing. The celluloid is heated in hot water, put on a machine plate, and pressed into shape to make bowls and boxes. Standing work for a one-armed or one-legged man. Wages, $14 up.

5. Breaking up scrap. This consists in breaking up the pieces of stock left over from operations so that it may be used again. Seated work for one-legged or lame men. Wages, $14 flat.

6. Lathe operating. The piece of celluloid is placed into the chuck of the lathe and as it revolves the stock goes against the tool. Whatever shape or groove desired is cut in the celluloid. Standing work for one-legged men. Wages, $14 up.

7. Routing. This is done by a sort of chisel which cuts out the groove in looking-glass backs into which the glass is to be fitted and in the backs of brushes into which the brush is to be fitted. Seated work for a one-legged man who has his right leg. Wages, $14 up.

8. Polishing and sanding. Consists in rubbing the articles with a sand preparation to take off any roughness, and polishing. Seated work for one-legged men. Wages, $14.

9. Scraping and finishing. Consists in scraping the edge of articles to make them smooth and ready for finishing. Seated work for one-legged men. Wages, $14.

10. Beveling combs. After the comb is cut out it is run through this machine which has a knife for beveling the back. Seated work for one-legged men. Wages, $14 up.

11. Cutting teeth in combs. Consists in operating a machine with gauged sharp knives that cut the teeth out of the solid pieces of celluloid the comb size. Seated work for one-legged men. Wages, $14 up.

12. Sawing teeth. One man operates several machines. These machines make expensive combs as the fine saw cuts out the teeth one at a time. Standing work for one-legged men. Possible for a one-armed man if he has one hand and a work arm. Wages, $14 up.

13. Rubbing. Polishing by hand. Seated work for one-legged men. Wages, $14 up.

14. Jig sawing. This is the same as band saw work. It is seated work, possible for one-legged men or a one-armed man with a work arm. Wages, $14 up.

15. Buffing. The buffers are flannel wheels that revolve rapidly. The article of celluloid is held against the buffer and polished. Seated work for one-legged or lame men. Wages, $14 up.

16. Brush cleaning. Consists in cleaning the partly finished article with a stiff brush. Seated work for one-legged men. Wages, $14.

17. Brush boring. A machine bores holes in the brush to put the bristles in. Seated work for one-legged or legless men. Wages, $14 up.

18. Putting bristles in the brushes. The bristles are fed into the machine, which automatically bunches the bristles, wires the bunch, and inserts the bristles into the holes in the back of brush. Seated work for one-armed or one-legged men.

19. Fitting steel into handles. The man uses a vise in which the piece of steel is held while the celluloid handle is put on. Files, buttonhooks, etc. are made in this way. Standing work possible for a one-armed man who has one hand. Wages, $14.

Advertising Novelties—Buttons, Paper-Weights, etc.

1. Operating foot press. The size and shape of the celluloid button or article is pressed by this machine. Seated work for one-legged men. Wages, $10 up.

2. Soldering. Consists in using a soldering iron. Seated work for one-legged men. Wages, $14 up.

3. Power press operating. Consists in cutting out metal or tin discs that go in the back of buttons. Seated work for one-legged men. Wages, $14 up.

4. Press feeding (printing). This press prints the advertising that is inserted between the tin back and celluloid face of the button. Standing work for one-legged men. Wages, $14 up.

5. Tapping. Consists in cutting holes in the metal discs. Seated work for one-legged men. Wages, $10 up.

6. Pins in buttons. Consists in putting the pins in the finished buttons, unskilled. Seated work for one-legged men. Wages, $10 up.

POSSIBILITIES FOR ONE-LEGGED MEN

Combs, toilet articles, etc. *Process*	*Weekly Wage*
Stamping	
Breaking up scrap	$14
Buffing (polishing)	14–36
Brushing and cleaning	14
Brush boring (legless)	14
Lathe operating	14
Routing	14
Polishing and sanding	14
Scraping and finishing	14
Beveling	14
Cutting teeth in combs (must have right leg)	14
Rubbing	14
Jig saw operating	14

POSSIBILITIES FOR ONE-ARMED MEN

Combs, toilet articles, etc. *Process*	*Weekly Wage*
Stamping	$14 up
Band sawing	14 up
Circular sawing	14 up
Pressing	14 up
Fitting steel into handles	14 up
Putting bristles in brushes (right hand and work hand)	
Sawing teeth, automatic (have left hand)	14 up
Jig sawing (work hand)	14 up

POSSIBILITIES FOR ONE-LEGGED MEN

Advertising novelties *Process*	*Weekly Wage*
Operating foot press	$10 up
Soldering	10 up
Tending power press	14 up
Press feeding (printing)	10 up
Tapping	10 up
Putting pins into buttons	10 up

WORKING CONDITIONS

1. Union. The industry is not unionized.

2. Wages. The wages are very good, ranging from $14 to $36 a week and up. The work is both week and piece work, so individual ability is paid for.

3. Nationalities. All nationalities are taken; there are many foreigners, particularly Italians.

ADVANTAGES FOR CRIPPLES

1. There are opportunities for both one-armed and one-legged men.

2. Much of the work is seated.

3. The work is light, no heavy lifting.

4. The work is easily learned; all employers are willing to teach in factories.

5. Factories are good places to work, have light and good air.

DISADVANTAGES FOR CRIPPLES

1. The celluloid is inflammable. While all precautions for fire protection are taken, there is danger for cripples, for employees must get out quickly in case of fire.

2. There is some cotton dust in the buffing room.

OPTICAL GOODS

The optical goods industry is a growing one and can be looked upon as being stable during and after the war. The trade of the small retail dealer has been considerably changed since the beginning of the war. Formerly, the lenses were bought already ground, but now a great many of the retail dealers have found that they cannot buy their lenses already ground, and, therefore, have to do their own grinding.

The majority of the employers interviewed were very anxious to cooperate with the movement for employing cripples. They are all willing to take a few learners but, of course, where the factory is small, they are unable to take very many.

The president of the Wholesale Optical Manufacturers' Association of New York stated that he did not think that one-armed men could be used, but he thought there was a great opportunity for one-legged men. The editor of the *Optical Journal and Review* maintained that one-armed men with work arms could work at some of the processes in the trade and that one-legged men could be employed at almost all the processes. He said that a great many learners were taken. The editor of the *Optical Record* thought that one-armed men could be employed at edging and polishing lenses and one-legged men at most of the other processes. The majority of the employers seen thought that one-legged men could be employed in almost all processes. Only one or two employers thought that one-armed men could be employed and one employer said that he would take one-eyed men.

PROCESSES

1. Assembling. Assembling frames and putting in lenses; this is very skilled work and is mostly seated. Legless men could be employed at it.

2. Blocking. This is highly skilled work and is almost all seated; it could be done by legless men. It consists of sticking the lens on a round metal disk with tar. It is rather difficult as it is necessary to have the lens fit on the middle of the disk.

3. Lens grinding:

   (*a*) Surfacing. This is very skilled work and is almost all standing; it could be done by one-legged men. It is done by placing lens on a revolving metal disk. A pointed metal piece is placed on the blocked lens and grinds off the glass.

   (*b*) Edging. This is a simple process and is usually standing work; it could be done by one-legged men, possibly by a one-armed man. The lens is held between the fingers of both hands and the edge ground down on a revolving wheel. (In some of the small factories, the edging and surfacing machines have a foot pedal, but in the larger places all the machines are worked by hand.)

   (*c*) Polishing. This is quite simple work. It is done standing. It could be done by a one-legged and, possibly, by a one-armed man. The lens is held between the fingers and placed on a revolving metal disk, which is covered with rouge and some sort of powder. These lenses are then sent to the final polisher. The final polisher consists of a number of metal disks upon which the lenses are placed. After being covered with rouge, they are screwed into place and the machinery revolves and they are polished down to a fine surface. One man can tend the series of polishers and walks up and down turning hand levers.

4. Lens cutting. This is highly skilled work, is usually seated and could be done by legless men. It requires a highly trained eye. The lenses are measured according to geometrical charts and are then marked. They are then placed in a small cutting machine which has to be set very carefully. Only a few men are employed at this work in each factory.

5. Surface grinding for instruments. This work is done in a few factories. It is skilled work and is seated and it could, therefore, be done by legless men. It is almost similar to the process of surfacing but it takes longer and requires more patience.

6. Sorting. In large factories, they make first, second, and third grade lenses. These are sorted by testing them with an instrument. It is very unskilled work and it could be done seated. It is sometimes done by girls.

7. Wrapping. In large factories, there is a good deal of wrapping glasses in paper, etc.

POSSIBILITIES FOR ONE-LEGGED MEN

Process	*Weekly Wage*	
	Minimum	*Maximum*
Assembling	$18	$30
Blocking	18	25
Lens surfacing	18	30
Lens edging	15	30
Lens polishing	15	30
Lens cutting	18	35
Surface grinding for instruments	18	35
Sorting lenses	12	

POSSIBILITIES FOR ONE-ARMED MEN

Process	*Weekly Wage*	
	Minimum	*Maximum*
Lens edging	$15	
Lens polishing	15	
Lens sorting	12	

WORKING CONDITIONS

1. Wages. Wages for learners range from $10 to $12 a week. Most of the employers maintain that, in six months, men ought to be able to earn from $15 to $20. Very skilled workers earn from $25 to $35.

2. Physical conditions. Fair.

3. Nationalities. On account of the shortage of labor, they are willing to take men of any nationality. Most of the workmen seem to be of a good type.

ADVANTAGES FOR CRIPPLES

1. It is a non-seasonal trade.

2. The work is light and could be done by one-legged men, some of it by one-armed men.

3. The wages are high.

4. In general, the conditions, in regard to light, ventilation, etc., are fair.

5. While a great deal of the work is skilled, most of the employers agree that a man could learn a good deal in six months.

6. Learners are taken in almost all factories.

DISADVANTAGES FOR CRIPPLES

1. The principal drawback to placing cripples in this trade is that there are few large factories, especially in New York City. Of course, the smaller ones cannot take very many learners at a time.

2. A good deal of the work is standing but it requires very little strength. Opinions differ as to the desirability of standing work for men with leg amputations. A one-legged man who is one of the investigators for the Institute, claims that he is perfectly able to stand all day long, whereas one of the physicians of the staff maintains that a cripple with a recent leg amputation cannot do standing work. However, in some of the smaller factories, they have high stools for the men, and it would seem perfectly possible for the larger factories to allow the men to sit at a good deal of the work.

THE MOTION PICTURE INDUSTRY

The motion picture industry is growing rapidly and there are openings for men in every branch. It is a trade, however, that requires particular knowledge. Men must be trained. The wages are exceptionally high and larger opportunities are constantly being offered to men in the trade.

The following information has been gained from Mr. Burr of the Paramount Picture Corporation; Mr. Hugh Ford of the Famous Players; Mr. Smith of the Vitagraph Studio; Mr. Gray and Mr. Hammer of the Biograph Laboratories; Mr. Pearsons of the Biograph Studio and one of the directors of the Metro Corporation. Information on the manufacture of the machine was supplied by Mr. Smith, manager of the Nicholas Power Company. These men all agree that the jobs listed in this report are possible for a cripple. All believe it is wise to establish a school to teach this trade. They are willing to give the benefit of their knowledge at any time. Mr. Burr offered to give some of his time in teaching. All employers are interested and willing to take crippled soldiers.

The trade is not very fertile in jobs for one-armed men. Men with lung wounds or diseases ought not to be in the small theaters because of the bad air. The galvanized booth where operating or projecting is done is very hard for a man suffering with any lung or nervous disease. Many positions in the industry are very hard on the eyes.

The industry is divided into four branches: (1) producing, (2) developing, (3) distributing, and (4) exhibiting. There are sub-divisions under these general branches.

POSITIONS

Producing

1. Electrician. The man must be a trained electrician, but can get sufficient knowledge in one month of intensive study or training. This work is important in taking of pictures. The light men operate the spot light, the top and side lights. There are often five and six of these men working in one scene. The work is possible for a one-legged man if he can stand and walk. Wages are from $25 to $50 and up.

2. Color-effects man. The man must be an artist with thorough knowledge who can plan out the color and light effect for the picture. He is a valuable man and gets a salary of from $50 to $200 a week.

3. Carpenter. The scenes are built in the studios and out-doors, one scene being constructed while another is being used. The carpenter builds the frames on which the canvas is stretched. He is a skilled workman. There are a number in each studio. Possible for a one-legged man who can stand and walk. Wages, $21 a week and up.

4. Scene painter. This man must be very skilled and possess artistic ability. He paints the scenes on the canvas that is put upon the frames made by the carpenter. Possible work for a one-legged man who can stand and walk. Wages, $25 and up.

5. Grip. (Scene shifter). The grips take the frames or scenes after they are made and painted and set them up in forms of buildings, rooms, and various scenes. It is not highly skilled work and can be learned in a short time. It is possible for a one-legged man who can stand and walk. Wages, $18 and up.

6. Property man. This man gets together all the furniture and fixtures and articles used in the scenes and is responsible for any required article. Possible work for a one-legged man who can stand and walk. Wages, $18 and up.

Developing

This is skilled work and requires a knowledge of photography and chemicals. Most of the work can be learned in two months, but some of the most highly skilled operations such as developing the negative and picture take at least six months' training.

7. Developing negatives. The negatives are brought from the studio to the laboratory, taken into a dark room, put on frames, lowered into a developing vat, and allowed to stay in this bath for a given length of time. The developer must know the exact minute to withdraw the negative from the vat. Standing work for one-legged men. Wages, $18 minimum, up to $40.

8. Chemical mixing. This man mixes the chemicals in which the negatives and prints are put to be developed. He must have a knowledge of photographic chemistry. Standing work for a one-legged man. Wages, $18 and up.

9. Washing films. This man takes the racks of film after they have been developed and lowers them into a vat of running water. This operation washes the surplus chemicals off the negatives and prints. Standing work for one-legged men. Wages, $18 up.

10. Drying films. The films after being developed are brought into the drying room which is kept at a certain temperature. In this room are large revolving drums upon which the films, still damp, are placed. Great care is necessary to regulate the temperature and moisture of this room, in order to avoid blistering. Standing work for one-legged men. Wages, $18 up.

11. Toning and tinting. The racks and films are lowered into vats of different colored chemicals. Standing work for one-legged men. Wages, $18 and up.

12. Inspecting. The film or picture is projected on a small screen in a booth; the inspector sits on a high stool and watches the film being run, notes all defects, and marks them to be cut out. Seated work for one-legged man. Wages, $18 up.

13. Printing machine operating. This work is done in a dark room. The operator puts the negative into the machine and in front of the negative the unprinted film. These are then drawn over an opening behind which there is a bright light, and as the negative and film are exposed to this light the printing is done. On the machine there is an automatic attachment which regulates the light. Standing work for one-legged men. Wages, $18 up.

14. Assembling and cutting. In this department they put the film together as it comes in 200 feet lengths from the printing department. It is necessary to paste the lengths together to make the number of feet for each reel. Seated work for one-legged or legless men. Wages, $18 up.

Distributing

One-legged and one-armed men may fill any of the following positions. The wages depend upon the individual ability.

1. Salesman. Without a leg or an arm a man may be a successful salesman. In this position he sells the pictures to the theaters or exchanges. These exchanges also may be run by a man with one leg or one arm. The particular kind of knowledge necessary is easily acquired by any man with sufficient brains to understand any business proposition.

2. Clerical worker. There are numerous clerical positions in this branch of the industry. New York offices are paying from $18 up to any amount that the man's ability may warrant.

3. Booker. A one-legged or one-armed man, or a man crippled in any way may be a successful booker. The booker plans the route of the pictures, that they may get to certain places on certain dates.

4. Advertiser. This man distributes the advertising matter displayed in the lobbies of theaters. He helps the exhibitor to get his pictures together and to put his show over in the best manner. Can have lost an arm or a leg or be otherwise crippled.

Exhibiting

This branch of the industry deals with the theaters where the pictures are finally shown to the public. The positions are as follows:

1. Manager. May be crippled. Usually is the owner of the theater.

2. Operator. A man with one arm might operate a machine if he were very proficient. The operator stays in the galvanized booth and turns the moving picture machine. He must understand and keep the machine in condition. Standing work for one-legged men. Wages $25 up.

3. Electrician. This man is responsible for the lighting effects of the theater and the electrical workings of the machine. Standing work for one-legged men. Wages, $25 up.

4. Cashier. May be a one-armed or one-legged man. Wages, $12 up.

5. Ushers; porters; doorkeeper. May be one-armed or one-legged men. Wages, $10, $12, $14 up.

Manufacture of Motion Picture Machines

Very skillful, careful work. Can be taught in factory. The following are operations for one-legged men:

ASSEMBLING DEPARTMENT

Process	*Weekly Wage*
Drill press operating	$20–$50
Lathe operating	20– 50
Gear-cutting machine operating	20– 50
Tool-making	20– 50

1. Drill press operating. The man holds the piece of metal on the drill plate, pulls a lever that raises and lowers the drill and makes holes in the metal sheet. A standing or seated job for a one-legged man. Wages, $14 a week up.

2. Lathe operating. The man inserts into the clutch at the end of the lathe a piece of metal that is to be turned into a given size and shape. As the lathe revolves the operator runs the cutting tool against the revolving piece of metal and cuts the metal into the required size and shape. A standing job for a one-legged man.

3. Gear-cutting machine. The round discs of metal are put into the machine and sharp cutters run back and forth over the edge of the disc and cut the teeth in the disc making the gear. A standing job for a one-legged man.

4. Tool-making. This is very skilled work. He must operate all machines which make tools

used in manufacturing machines. A standing job for a one-legged man. Wages, $30 to $50 and more a week.

MECHANICAL DEPARTMENT

Process	*Weekly Wage*
Drill press operating	$14–$35
Making doors for lamp house	14– 35
Drilling castings	14– 35
Riveting machine operating	14– 35
Lathe operating	14– 35
Making cams	14– 35
Punching machine operating	14– 35
Automatic cutter machine operating	14– 35

All operations in this department are standing jobs for one-legged men from $14 to $35 per week. They are all described above, except riveting machine operating. In this process the worker puts the two pieces of metal to be riveted on the machine plate under a trip hammer, which automatically rivets the two pieces together. Standing work for one-legged men.

POSSIBILITIES FOR ONE-LEGGED MEN

Drill press operator
Lathe operator
Gear-cutting machine
Tool-maker
Making doors for lamp house
Drilling castings
Riveting machine
Making cams
Punching machine operator
Automatic cutter machine
Electrician's helper
Grip (scene shifter)
Property man
Carpenter's helpers
Scene painters
Porter
Developing negatives
Chemical mixer
Washing films
Drying
Toning and tinting
Inspecting
Printing machine operator
Cutting and assembling
Salesmen
Booker or advertiser
Clerical workers
Manager
Electrician
Cashier
Doorkeeper
Usher
Electrician
Color-effect men

POSSIBILITIES FOR ONE-ARMED MEN

Possible jobs for one-armed men are only found in the Exhibiting Branch.

Salesman
Advertiser
Clerical worker
Booker
Manager
Electrician (may be)
Doorkeeper
Usher
Cashier
Porter

WORKING CONDITIONS

1. Race. All races are taken except negroes.

2. Unions. The industry is not unionized but there are unions inside of it, such as machinists, carpenters, etc.

3. Wages. The wages range in the machine manufacture from $21 to $51 a week. In the laboratories for the most unskilled work, $18 up to $50 and $75. In the producing from $25 a week up to $200 a week, which is the salary several of the artistic color-effect men are receiving.

ADVANTAGES FOR CRIPPLES

1. The industry is growing.

2. There are unlimited jobs cripples can do.

3. It is one of the trades that will be taught and can be learned. Some parts of the work require a month's intensive training, some require six months and more.

4. The salaries are exceptionally high.

5. The employers are willing to help and take cripples.

DISADVANTAGES FOR CRIPPLES

1. The work in connection with this industry offering disadvantage is in the manufacture of the projecting machine itself. It is heavy, very skilled work, and rather dangerous.

2. There are very few jobs for arm cripples.

3. It is quite impossible for a cripple to be a camera man or the man who takes the pictures as these men have to be in all sorts of hazardous positions.

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